



# Toolbox for Regional Policy Analysis

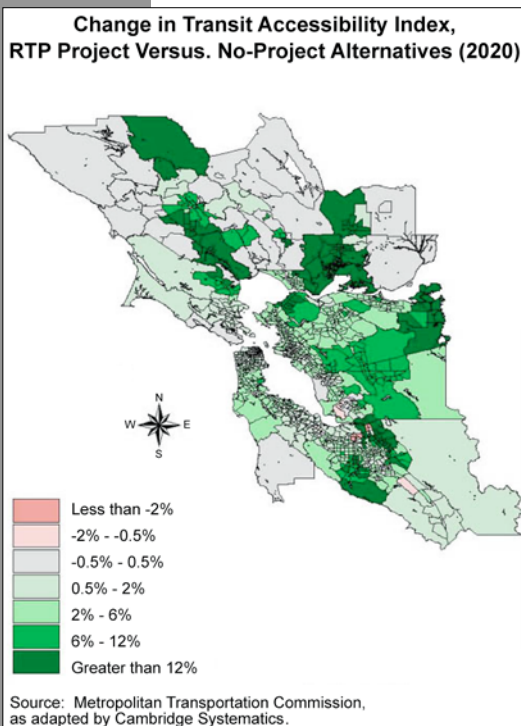
## BACKGROUND

Interest is growing across the nation in the regional-level impacts of both transportation and land use policies. In both large and small metropolitan areas, planners are facing questions regarding the impacts of their decisions on a wide range of factors. Areas of interest include not only traffic congestion and emissions, but also land use, economic development, accessibility, energy consumption, natural habitat, and the distribution of impacts across population groups.

This toolbox includes 10 case studies illustrating technical methods that can be used to assess regional impacts. The toolbox is intended for metropolitan planning organizations, state departments of transportation, and other agencies or groups. The methods highlighted in the case studies can be used to assess the impacts of alternative highway or transit investments, freight improvement programs, demand management and systems management, or changes in regional or local land use patterns.

In addition to case studies, the toolbox includes brief descriptions and references to over 60 other assessment methods and modeling tools. The toolbox is presented as an HTML-based document accessible through the FHWA web site.

### SAN FRANCISCO BAY AREA CASE STUDY



## CASE STUDIES

### Albany, NY – Land Use Modeling

A simple pivot-point land use model is applied to test the impacts of transportation actions and development patterns.

### Envision Utah – A “Quality Growth Strategy”

GIS-based models are applied to measure the transportation, air quality, infrastructure cost, and water use impacts of alternative regional transportation/land use scenarios.

### Montgomery County, MD – Accessibility

Highway and transit accessibility measures are used in developing a transportation policy plan and comparing alternative scenarios.

### Orange County, CA – GIS and Transit

GIS is used to measure local and regional transit accessibility and to assist in transit system planning.

### Portland, OR – Freight Impacts

Economic models are used in conjunction with a travel demand model to measure the regional economic benefits of freight improvements.

### Sacramento, CA – Land Use-Transportation Model

A land use-transportation model is used to assess the travel and emissions benefits of roadway, transit, and land use-based strategies.

### San Francisco Bay Area, CA – Accessibility

Accessibility measures are used to assess the distribution of transportation benefits from the regional transportation plan.

### SPARTACUS (Europe) – Sustainability Indicators

An integrated transportation-land use model and GIS are used to test policies in three European cities. The distribution of air quality and noise impacts is identified at the level of 100-meter grid cells.

### Tren Urbano (San Juan, PR) – Transit Accessibility

Regional accessibility is measured by income group for alternative transit investments and for station area land use changes.

### Waterloo, IA – Environmental Justice

Exposure of low-income and minority populations to pollutants and noise is identified at the census block group level.

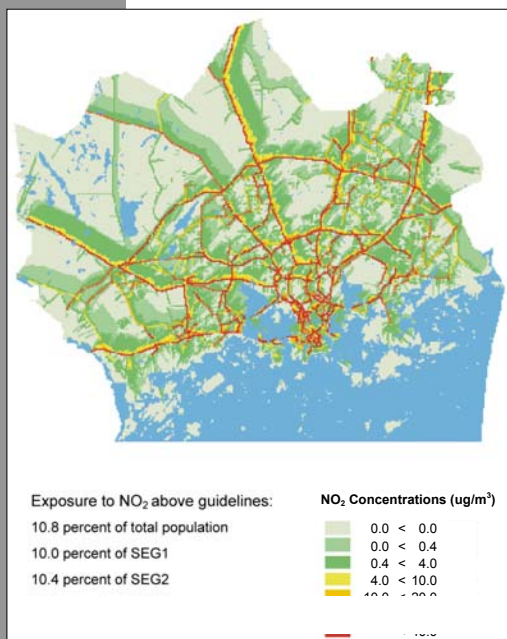
## IMPACT METHODOLOGIES

In addition to the case studies, technical methods are summarized for each of the following types of impacts:

- Land use and development
- Accessibility
- “Physical” environmental impacts including sensitive habitat, wetlands, water quality, and historical and archeological sites
- “Operating” environmental impacts including emissions, air quality, noise, and energy
- Economic development
- Fiscal impacts
- The distribution of impacts across population groups
- Cost-benefit or full social cost analysis

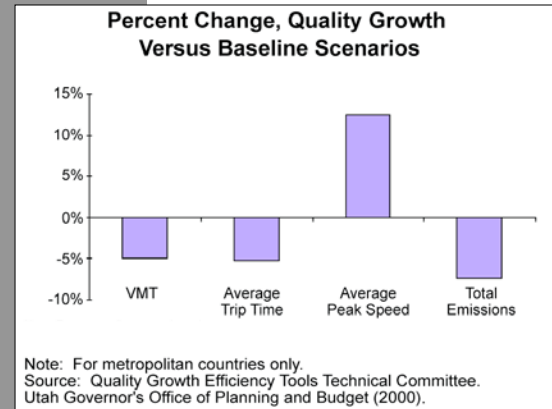
These impacts depend upon changes in transportation system infrastructure, performance, and land use. The methods described in this toolbox are designed to work in conjunction with existing tools for forecasting travel changes, such as regional travel demand models or sketch-planning methods.

### SPARTACUS CASE STUDY



This graphic shows NO<sub>2</sub> concentrations in the Helsinki, Finland metropolitan area. A pollutant dispersion model is applied to track the movement of pollutants across 100-meter grid cells. This information is overlaid on population by socioeconomic group in each grid cell. The population in each socioeconomic group exposed to pollutant levels higher than guidelines then can be estimated.

### ENVISION UTAH CASE STUDY



This chart shows the transportation and emissions impacts in 2020 of the “Quality Growth Scenario,” a set of future land use and transportation alternatives for the Salt Lake City, Utah region.

## CASE STUDIES ARE AVAILABLE...

On the Internet at:

<http://www.fhwa.dot.gov/planning/toolbox/index.htm>

## FOR MORE INFORMATION

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